

**Memorandum****REVISED**

Public Works

DATE: November 24, 2003

TO: Mayor and City Council

FROM: Mary O'Connor, Deputy Public Works Manager, LRT (350-8819)
Carlos de Leon, Acting Deputy Public Works Manager, Transportation (350-8527)

THROUGH: Glenn Kephart, Public Works Manager (350-8205)

SUBJECT: **Issue Review Session 12/04/03: Transit Capital Projects (Downtown Transit Center Building and Regional Bus Operations and Maintenance Facility)**

Staff will be presenting information on the Downtown Transit Center Building and the Regional Bus Operations and Maintenance Facility at the December 4th Issue Review Session, as referred by the Council Light Rail/Transportation and Development Services Committee. The presentation will summarize the following issues related to these projects:

Downtown Transit Center Building. At the October 2nd City Council Issue Review Session, the Mayor and Council approved the downtown transit concept plan and building programming. In addition, Mayor and Council provided for the option of adding building square footage if additional space was deemed appropriate. At the November 18th Council Light Rail/Transportation and Development Services Committee meeting, staff presented the following information: financial information on the cost/benefit of additional office space in the transit center building; the potential for including options for employee child care in the building programming; and a proposal for obtaining U.S. Green Building Council LEED (Leadership in Energy and Environmental Design) Silver certification for the building. This item was forwarded to the full Council by the Council Committee, with their recommendation to increase the building space to 31,000 sq ft., to seek LEED Silver Building certification, and to provide options for employee child care in the building. ***Council direction is requested on the additional building square footage, LEED building certification, and on providing options to allow for employee child care in the building. See Attachment A.***

Regional Bus Operations and Maintenance Facility. As part of a Valley Metro bus facility plan, the City of Tempe, Regional Public Transportation Authority (RPTA) and the City of Scottsdale are working on the design and construction of a 250 bus operations and maintenance facility in the East Valley. This facility is proposed to be located in Tempe. Information on the programming, site location, schedule and funding were provided in Attachment B to the Council Light Rail/Transportation and Development Services Committee meeting on November 18. This item was forwarded to the full Council by the Council Committee, with a recommendation for acceptance of the proposal. ***Council direction is requested on the proposed location for this regional facility.***

If you have any questions on the attached material, please contact Mary O'Connor, Carlos de Leon, Gary Davis (858-2105) or Bonnie Richardson (350-8628).

Attachments: A1-A3) Memo from Bonnie Richardson regarding Transit Center Building issues
B1) Memo from Gary Davis regarding Regional Bus Maintenance Facility

Memorandum

City of Tempe



TO: Mary O'Connor
FROM: Bonnie Richardson
DATE: November 24, 2003
SUBJECT: Transit Center Building Issues

Potential Childcare Space

Attached is a partial schematic plan for the transit center, including a potential 2,675 square feet childcare center on the first floor. The architectural programming of this space provides 1,000 square feet of interior classroom or play area, 1,325 square feet of staff service area, and 350 square feet of support space. A minimum of 1,200 square feet of adjacent outdoor play area is required by code. This would accommodate approximately 28 children, age 3 and younger.

Sustainable Design

The design team is exploring the opportunity to develop the transit center as the first municipal "green building" in Tempe. Green building practices offer an opportunity to create resource-efficient and environmentally-sound buildings by using an integrated approach to design. The primary principles address:

- Environmental impact (waste minimization to ease impact on landfills, utilization of materials that are produced locally and that have a low embodied energy)
- Resource conservation (water and energy conservation, low water use landscape, selection of materials with some recycled content)
- Renewable energy resources (commercially available, cost-effective energy technologies, energy efficient equipment and appliances)
- Healthy and comfortable environment (Indoor air quality, natural light, non-toxic materials, exterior public spaces that provide respite from summer sun and heat)
- Community issues (historic preservation of site, convenient access to public services, easy access to a variety of transportation modes, reduce urban heat islands)
- Life-cycle costs (reduce operation and maintenance costs)

We are investigating the benefits of LEED certification, which is a nation-wide process, and would attempt to achieve the LEED Silver standard. This effort is in line with the City's Quality Initiative for Buildings (QBI). See attached excerpt from the QBI Manual.

A City "green team" has been formed to have the appropriate staff addressing the issues. OTAK, the architectural consultant, has a LEED certified architect in their offices who will assist us with this process. The initial meeting of this team is December 4. Due to the accelerated schedule for the rail project and the importance of having the transit center substantially complete by December 2006, this team will be asked to work diligently to support this effort.

Attachment: A2) Transit Center schematic
A3) Quality Building Initiative excerpt on Sustainable Design



Staff services

Includes circulation, storage, restrooms, lobby, check-in and a staff office

1325 sq. ft.



Support spaces

Includes kitchen, freezer space, bulk storage and mechanical/equipment

350 sq. ft.



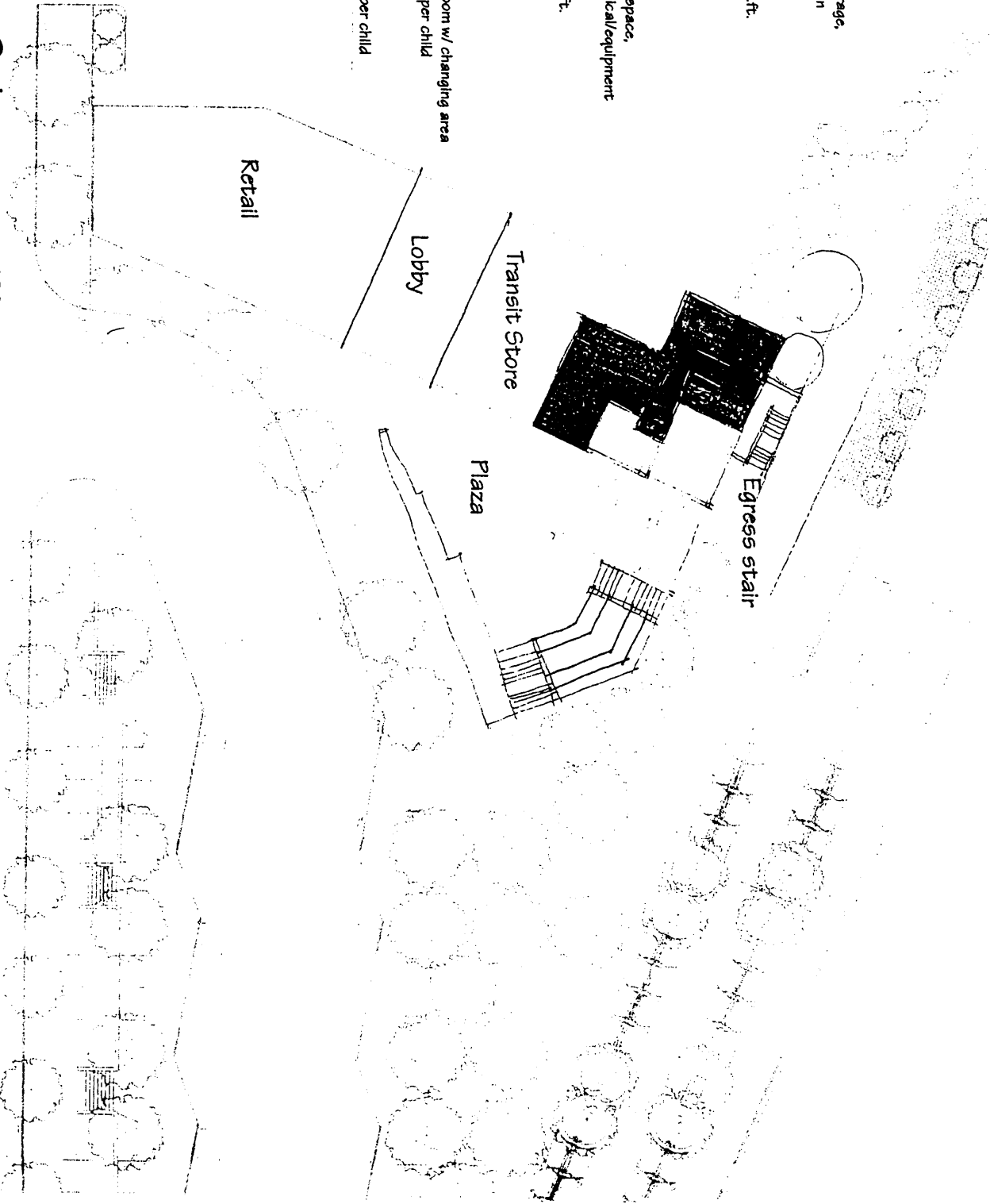
Classrooms

Includes infant/toddler room w/ changing area
300 sq. ft. /35 sq. ft. per child (8 children)
classroom 2yrs +
700 sq. ft. /35 sq. ft. per child (20 children)



Outdoor play area

1200 sq. ft.
28 children x 75 sq. ft.
Required by code to provide space for 50% occupancy at any one time, as long as activities are staggered



1 Day-care Schematic Plan 2675 sq. ft. as programmed



QUALITY INITIATIVE
FOR BUILDINGS

SUSTAINABLE BY DESIGN

(DRAFT)

Principles + Guidelines

INTRODUCTION

Sustainability, or "green building," is a holistic approach involving the entire design team (owner, users, architect, engineers) and incorporating building design, technology and construction which can minimize environmental impact, reduce energy consumption, limit pollution and waste, reduce life-cycle costs and contribute to human health and comfort. Buildings must be not only sustainable, but also safe, economical, durable, functional, comfortable, inviting, aesthetically pleasing and in concert with community and neighborhood goals.

Rather than a specification or checklist, this section sets forth general principles and guidelines for enhancing sustainability in the design of City facilities. Specific situations will require specific solutions. Each individual project has a unique combination of requirements determined by identification of needs, expectations for life cycle costs, context & setting, physical & financial constraints and available technologies.

The potential benefits of sustainable design include:

- ◆ Lower construction costs, resulting from lower waste disposal costs.
- ◆ Reduced operating costs, resulting from lower utility costs and reduced maintenance costs.
- ◆ Increased productivity, resulting from better tenant and employee retention, improved working conditions and fewer hours lost to health-related factors.
- ◆ Overall environmental improvement, resulting from reduced pollution and contribution to the "urban heat island" effect.

I. SUSTAINABILITY ASSESSMENT

Define sustainability goals for the design of new facilities or the retrofit of existing. Scope and level may vary, but the overarching goal remains the same: to determine the appropriate level of sustainability.

Sustainability requirements must be reconciled with those of other codes and ordinances (UBC, CPTED, ADA, etc.).

Climatic Analysis

Climatic data, such as temperature ranges, precipitation, wind direction, solar angles, etc. must all be considered in the design of occupiable facilities.

Use Analysis

Examine the proposed location and uses of the facility and determine appropriate design strategies.

Cost/Benefits Analysis

The potential cost in time and money must be weighed against the potential benefit.

Availability Analysis

Determine availability of proposed materials/systems and compatibility with project schedule.

II. GENERAL CONCEPTS

Tempe is located in the northern Sonoran Desert, a hot and arid, yet ecology diverse, region. Historically, an irrigated "oasis" within the desert, Tempe seeks to retain aspects of that image while incorporating indigenous building and landscape materials and embracing water and energy-saving strategies to create a unique built environment.

III. SITE PLANNING

In general, public facilities should be located where pedestrian, bicycle and transit access can be maximized, reducing dependence on the automobile; provide easily-accessed connections to the facility from existing pedestrian and transit routes.

Orientation

Orient buildings for proper climatic response: maximize northerly and southerly exposures, minimize east and west.

Locate facilities so as to minimize disturbance to natural site areas.

Locate exterior functional areas for appropriate solar exposure (desired sun or shade).

Landscaping

Utilize landscaping to provide shade from parking to walks to entries to building facades. Provide shade, filtered leading to solid, as a transition from exterior to interior space. Consider vertical "green walls" (trellis structures) to support deciduous climbing plants to block sun during the summer, while admitting it in the winter. Utilize landscaping to reduce glare and reflected heat from paved surfaces near buildings.

Maximize indigenous and low-water-use plant materials which can provide shade and visual pleasure with minimal maintenance and water-use.

Utilize graywater and collect rainwater for landscape irrigation, where feasible (such as sloping parking areas to drain into landscape strips). Utilize drip and other low-water-use irrigation systems.

Limit use of water features to minimize water use/loss and maximize psychological cooling effects.

IV. BUILDING DESIGN

Spatial Relationships

Arrange occupied spaces for optimum exterior views and orientation; minimize spaces adjacent to west-facing elevations.

Configuration

Building shape (generally, more or less rectangular) should typically allow for maximum exposure in northerly and southerly directions, with east and west exposures minimized.

Design for modular or standard units where feasible, in order to minimize waste.

Materials

Create a well-insulated building envelope (minimum R-7 perimeter and slabs, R-19 wall assemblies, R-30 roof/ceilings) with thermal mass.

Utilize barrier wraps and sealants to minimize air penetration at openings, cracks, etc.

Select materials that are durable and appropriate for the climate and effects of the harsh sun (including UV damage to roofing and other sensitive materials).

Utilize recycled and easily-recyclable materials where feasible. Utilize materials of local manufacture where feasible. Avoid materials which unduly deplete limited natural resources. Avoid materials containing volatile organic compounds (VOC's), toxic or hazardous components, or which exhibit high rates of off-gassing, such as certain particle boards, carpets, adhesives, sealers and paints. Utilize water-based paints and sealers, where feasible.

Utilize roofing materials which minimize heat and noise transfer.

Where possible, utilize structural materials which require little or no finish treatment.

Relatively light colored materials and finishes should be employed on building exteriors – light enough to reduce heat gain, but not so light as to contribute to glare and reflected heat gain in nearby spaces and buildings.

Utilize engineered lumber products and alternative trusses in lieu of sawn wood where feasible. Utilize recycled steel studs where feasible.

Exercise caution during installation to avoid exposure to moisture and potential mold cultivation.

Openings/Fenestration

Maximize openings to the north and south; minimize those to the east and west. Provide shade at all openings other than north-facing (provide full shade at noon on 21 June for south-facing openings). Utilize energy-efficient glazing and frames (R-5 minimum for the overall assembly). Reflective glazing should be avoided, however, especially at grade level. Utilize operable windows where feasible, for natural light and cross-ventilation.

Utilize vestibules at entries to minimize air infiltration. Utilize minimum R-5 insulated exterior doors with complete weatherstripping and thresholds.

Consider use of clerestory windows (in lieu of skylights) to maximize natural light and ventilation.

V. SYSTEMS/TECHNOLOGY

All key building systems should be checked for conformance to design intent, its operating capabilities and procedures verified and, if necessary, fine-tuned to ensure optimal efficiency. A holistic systems design approach in which all systems, materials and use patterns are considered is also essential.

Mechanical/HVAC

Utilize energy-efficient equipment (13.0 SEER or greater). Zone systems to allow for specific responses to specific uses and orientations. Utilize heat pumps where appropriate.

Utilize evaporative cooling where appropriate, such as equipment repair bays, etc. Design systems for maximum efficiency and ease of maintenance.

Utilize natural gas where available/appropriate.

Seal and insulate ducts; limit length of duct runs; locate in conditioned space wherever possible. No turns greater than 90 degrees; no flex duct in main trunk lines and no flex takeoffs over 5 feet. Insulate hot water heaters and pipes; limit length of hot water line runs.

Utilize ceiling fans, economizers and balancing dampers where feasible. Design for lower duct pressure to reduce interior noise levels.

Utilize chilled water/cooling tower systems, as well as thermal storage tanks where appropriate/feasible. Minimize standing water in towers and air-distribution systems.

Exceed minimum code standards for fresh air supply. Locate air intake and exhaust fans sufficiently apart so as to prevent cross-contamination of supply air.

Provide proper ventilation and easily-cleaned and maintained air-distribution systems to promote a quality indoor environment.

Utilize low-flow plumbing fixtures and appliances. Utilize graywater where appropriate.

Electrical/Lighting

Utilize energy-efficient lighting, such as fluorescents (compacts in lieu of incandescents) and halogens. Utilize task lighting with reduced ambient levels where feasible.

Consider heat recovery and removal systems at luminaires.

Avoid recessed can fixtures in insulated ceilings or utilize insulated fixtures.

Specify energy-efficient appliances.

Controls

Utilize energy-efficient HVAC and lighting controls, such as occupancy sensors, to minimize energy consumption in unoccupied areas and to respond to specific uses and orientations. Allow for varying light levels, through dimming or switching, in response to natural lighting.

Solar

While active solar systems such as water heating and photovoltaics could be considered in some circumstances, incorporation of such passive principles as contained in these guidelines may prove more successful overall.

REFERENCES/RESOURCES

Arizona Public Service.

City of Scottsdale Green Building Program.

Salt River Project.

Sustainable Buildings Industry Council.

U.S. Army Sustainable Design Development (SDD).

United States Green Building Council (USGBC)/Leadership in Energy and Environmental Design (LEED).

Memorandum

City of Tempe



Date: November 4, 2003

To: Council Transportation/LRT & Development Services Committee

From: Gary Davis, Capital Projects Planner

Subject: Regional Transit Operations and Maintenance Facility

At the Council Committee's November 18 meeting, Transit staff will present program, site, schedule and funding information regarding a planned regional transit operations and maintenance facility in Tempe. Staff is seeking Council Committee concurrence with the staff recommended site location for this facility. After consideration by the Council Committee, the project and recommended site location would be presented to the full Council for approval.

Program. The project involves the construction of a regional transit facility that will provide fueling, parking, and maintenance space and equipment for up to 250 buses, as well as operation offices, and parking for transit employees. Over 100 of the buses, which are owned by the City of Tempe, will be located at the proposed facility. The remaining buses are owned by Valley Metro/RPTA and the City of Scottsdale, both of whom are participating in the planning, programming, and funding of the project. These buses are currently maintained at two leased facilities under bus operations and maintenance contracts with ATC-NEC.

Site Location. The recommended site for the facility is on the west side of 52nd Street where it transitions into Rio Salado Parkway, about one half mile north of University Drive. The site comprises about 20 acres of a 55-acre City-owned parcel set aside for Public Works Department uses. There is easy access to the site from freeways and arterial streets that serve the east valley, and the site is surrounded by industrial uses and open land. A DVORTAC navigation facility is adjacent to the site and the end of a Sky Harbor runway is about one mile to the west; the site design process will require Federal Aviation Administration (FAA) review and approval.

Schedule. An environmental assessment is being finalized for the proposed site. There are no known major environmental issues at this time. As a result, staff is beginning the process of selecting a design consultant for the facility. The design phase is expected to take one year. It is anticipated that construction will begin in 2005. The construction is planned in three phases (see attached concept plan):

- The first phase will include site development and Liquid Natural Gas (LNG) fueling and a portion of the bus parking.
- The second phase to include the remainder of the bus parking, the operations building and employee parking
- The third phase will include a 62,000 square foot multiple-bay bus maintenance garage.

Funding. Federal and local funds, which total approximately \$4.5 million, are available for the planning, design and construction of the first phase. It is expected that federal 2004 discretionary funds of approximately \$4 to \$6 million will fund the second phase of construction. The third phase of the facility, which is estimated at \$12 to \$15 million, is currently not funded. The City of Tempe and its partners will be seeking the additional federal discretionary funding or formula funding to complete the facility.

Please contact me 480-858-2105 if you would like further information prior to the Committee meeting.



